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INSTRUCTION MANUAL

CSL™
Computerized Speech Lab

Model 4300B
Software Version 5.X

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Appendix L - IPA Characters

Introduction

The CSL program is provided with the capability to display characters of the International Phonetic Alphabet (IPA Symbols) in a transcription screen, as a means of annotating, describing and identifying a speech waveform that appears in another display screen. The IPA transcription can also be printed along with the other screens displayed using "Print Screen".

The IPA font for use with CSL consists of 193 symbols, including consonant and vowel symbols, segmental diacritics, suprasegmental symbols and transcription boundary markers. The basis for the font is the International Phonetic Alphabet (revised to 1989) as published in the *Journal of the International Phonetic Association*, 19 (2), 1989. Key definitions have been assigned to 131 keyboard positions as a "default" keyboard for the IPA font. This is the number of keys available for assignment when using CSL in the "Key", "Shift Key" and "Alt Key" modes. Symbols which have not been given a keyboard definition in the "default" keyboard may be reassigned by the user to accommodate local convention, frequency of use of particular characters, preferred mnemonic placement, or ease of typing. In "Key" mode, 46 keys are available for assignment, excluding the *space bar* and the *semicolon* (;) key which is already assigned a definition in CSL. In "Shift Key" mode, all 47 keys are available for assignment. In "Alt Key" mode, 38 keys are available for assignment. "Alt Key" positions which have no definitions and which, therefore, may not be used for the IPA font include the *back accent* (` ~), *comma* (, <), *period* (. >), *slash* (/ ?), *semicolon* (; :), *quotation mark* (' "), *left square bracket* ([{), *right square bracket* ( ] }), and *backslash* (\ |) keys.

All current IPA vowel symbols and most consonant symbols have been given "Key" or "Shift Key" definitions, and diacritics have been assigned largely to the "Alt Key" keyboard. This has been done by using the IPA Number of each symbol or diacritic as set out in the *Journal of the International Phonetic Association*, 20 (1), 1990, and assigning it a keyboard code in MS-DOS format. Modifications to the IPA keyboard for use with CSL can also be made by referring to each symbol's IPA Number and replacing the current, preassigned Number with the Number of the new, desired symbol using the "Define Key" procedure. IPA Symbols and their corresponding Numbers and Names, as well as their currently assigned keyboard locations in CSL, are listed in the accompanying tables.

Symbols not assigned locations in the "default" IPA keyboard include many new, recently approved IPA symbols. Among these are {β, ɦ, ɾ, ɬ, ɻ, p, t, c, ɟ, k, q, ɢ, ʡ}. Other approved symbols not assigned keyboard locations are {ɯ, ɧ, ɪ}. Quite a few diacritics remain unassigned -- tone marks, for instance -- as their use (outside of a core set) will depend largely on local convention and user preference. The set of keys already defined may be altered or extended to include phonetic values required by the individual user. The one click symbol which was left out, for example, could be easily reinserted in the keyboard definitions by assigning its IPA Number (178) to the "Shift 1" (!) key if the symbol now occupying that location is expendable. Alternatively, many keys in the "Ctrl Key" mode may also be defined as IPA characters if the user wishes to expand the set. In each symbol category, several nonIPA or former IPA characters have been included in the IPA font. In all cases, these are characters which can be identified with an IPA Number and assigned a keyboard location if desired.

(See attached list of IPA Symbols, IPA Numbers, and keyboard locations.)

Computer Coding of the IPA

The declaration of the workgroup on Computer Coding of IPA Symbols and Computer Representation of Individual Languages recommends that a unique numerical equivalent and descriptive name be assigned for reference purposes to every symbol or diacritic used in current or earlier versions of the IPA. The logical phonetic organization of the IPA Symbol Chart is the basis for assigning the IPA Number, the first digit of which indicates the category of the symbol. The 1nn series includes consonant symbols from the principal place-by-manner grid of the Chart and from the Other Symbols section. The 2nn list includes former or alternative IPA consonant symbols (beginning with 201), and nonIPA consonant symbols that have been widely used in computer-coded systems (starting with 299 and working backwards). The 3nn series specifies vowels, most of which appear in the vowel quadrilateral (beginning with 301), and with former symbols numbered from 399 backwards. The 4nn series includes segmental diacritics (beginning with 401), with formerly used diacritics that no longer appear on the Chart numbered from 499 backwards. The 5nn series includes suprasegmental symbols, from that section of the Chart (beginning with 501), with previously specified tone marks numbered from 599 backwards. The 6nn series is reserved for assignment at a future date to symbols representing voice quality settings or pathological speech; and 7nn-8nn are also reserved for future specification. The 9nn series specifies control characters and escape sequences, designed to relate characters to each other in a string (for correct placement of diacritics, for example). The intention of the IPA Number Chart is to parallel the IPA Symbol Chart, making the locations and relationships of items explicit and unambiguous. For the present purposes of review and evaluation of the numbering scheme, the presentation of the IPA Number Chart and corresponding lists is intended to illustrate the relationships between symbols on the Chart (and with those not shown but also numbered), and where overlap between categories may occur.

Symbols can now be listed with reference to their IPA Number, and cross-referenced to symbol Name. These reference lists can follow (1) chart order of appearance of the symbols, (2) quasi-alphabetical order of the symbol shapes themselves and (3) alphabetical order of the Names of the symbols. The IPA Number Chart provides a visual map in chart order. The list of Consonant/Vowel Symbols in Chart/Number Order summarizes this sequence and includes the listing of the 2nn series and items of the 3nn series that are no longer on the Chart. The list of Consonant/Vowel Symbols in Alphabetical Order by Symbol reproduces the compilation in Pullum and Ladusaw's *Phonetic Symbol Guide* (1986). Some modifications have been made to the Names taken from the *Guide* as they appear here. It is the sentiment of the Computer Workgroup that in order to have an explicit system for referring to each character unambiguously, symbols need to be called something which is relatively nonphonetic in addition to having a number. Diacritics are listed, with illustrations as to usage, according to chart order. In addition, it is also possible to produce cross-referenced lists to Consonant/Vowel symbols and to Diacritics according to alphabetical order by symbol Name. All of these listings are proposed to constitute a part of *The IPA Handbook.*

Reference

Pullum, G. K. and W. A. Ladusaw, *Phonetic Symbol Guide.* Chicago: University of Chicago Press, 1986.

Consonant/Vowel Symbols

Name	IPA	Number	IBM Keystroke
Lower-case P	p	101	P
Lower-case B	b	102	B
Lower-case T	t	103	T
Lower-case D	d	104	D
Right-tail T	ʈ	105	5
Right-tail D	ɖ	106	Sh 6 (^)
Lower-case C	c	107	C
Barred Dotless J	ɟ	108	Sh K
Lower-case K	k	109	K
Lower-case G	ɡ	110	G
Lower-case Q	q	111	Q
Small Capital G	ɢ	112	=
Glottal Stop	ʔ	113	Sh / (?)
Lower-case M	m	114	M
Left-tail M (at right)	ɱ	115	Sh M
Lower-case N	n	116	N
Right-tail N	ɳ	117	,
Left-tail N (at left)	ɲ	118	Sh , (<)
Eng	ŋ	119	Sh N
Small Capital N	ɴ	120	`
Small Capital B	ʙ	121	(NOT ASSIGNED)
Lower-case R	r	122	R
Small Capital R	ʀ	123	Alt 6
Fish-hook R	ɾ	124	Sh 3 (#)
Right-tail R	ɽ	125	Sh 5 (%)
Phi	ɸ	126	Sh F
Beta	β	127	Sh B
Lower-case F	f	128	F
Lower-case V	v	129	V
Theta	θ	130	Sh T
Eth	ð	131	Sh D
Lower-case S	s	132	S
Lower-case Z	z	133	Z
Esh	ʃ	134	Sh S
Yogh	ʒ	135	Sh Z
Right-tail S (at left)	ʂ	136	0
Right-tail Z	ʐ	137	Sh 0 ())
C Cedilla	ç	138	Sh C
Curly-tail J	ʝ	139	Sh J
Lower-case X	x	140	X

Consonant/Vowel Symbols (continued)

Gamma	ɣ	141	Sh G
Chi	χ	142	Sh X
Inverted Small Capital R	ʁ	143	Sh R
Crossed H	ħ	144	Sh H
Reversed Glottal Stop	ʕ	145	Sh 1...(!)
Lower-case H	h	146	H
Hooktop H	ɦ	147	'
Belted L	ɬ	148	Sh . (>)
L-Yogh Digraph	ɮ	149	Sh ; (:)
Cursive V	ʋ	150	1 (one)
Turned R	ɹ	151	4
Turned R, Right Tail	ɻ	152	Sh 4 ($)
Lower-case J	j	153	j
Turned M, Right Leg	ɰ	154	(NOT ASSIGNED)
Lower-case L	l	155	l (L)
Right-tail L	ɭ	156	.
Turned Y	ʎ	157	Sh L
Small Capital L	ʟ	158	(NOT ASSIGNED)
Hooktop P	ƥ	159	(NOT ASSIGNED)
Hooktop B	ɓ	160	Alt B
Hooktop T	ƫ	161	(NOT ASSIGNED)
Hooktop D	ɗ	162	Alt D
Hooktop C	ƈ	163	(NOT ASSIGNED)
Hooktop Barred Dotless J	ɟ	164	(NOT ASSIGNED)
Hooktop K	ƙ	165	(NOT ASSIGNED)
Hooktop G	ɠ	166	Alt G
Hooktop Q	ʠ	167	(NOT ASSIGNED)
Hooktop Small Capital G	ɢ	168	(NOT ASSIGNED)
Turned W	ʍ	169	Sh W
Lower-case W	w	170	w
Turned H	ɥ	171	Alt Y
Small Capital H	ʜ	172	(NOT ASSIGNED)
Barred Glottal Stop	ƪ	173	(NOT ASSIGNED)
Barred Reversed Glottal Stop	ƺ	174	(NOT ASSIGNED)
Hooktop Heng	ɧ	175	(NOT ASSIGNED)
Bull's Eye	⊙	176	(NOT ASSIGNED)
Pipe	ǀ	177	Sh 9 (( )
Exclamation Point	ǃ	178	Alt 1
Double-barred Pipe	ǂ	179	(NOT ASSIGNED)
Double Pipe	ǁ	180	Sh = (+)
Turned Long-leg R	ɺ	181	(NOT ASSIGNED)
Curly-tail C	ɕ	182	-
Curly-tail Z	ʑ	183	Sh - (_)

Consonant/Vowel Symbols (continued)

Turned T	ɪ	201	(NOT ASSIGNED)
Stretched C	ɕ	202	(NOT ASSIGNED)
Inverted Glottal Stop	ʖ	203	(NOT ASSIGNED)
Curly-tail Esh	ʃ (NO)	204	
Curly-tail Yogh	ʒ (NO)	205	
Long-leg R	ɾ (NO)	206	
Superscript S	ˢ (NO)	207	
Left-hook T	ʈ (NO)	208	
L with Tilde	ɬ (NO)	209	
Cursive G	g (NO)	210	
T-S Digraph	ts (NO)	211	
D-Z Digraph	dz (NO)	212	
T-Esh Digraph	ʧ	213	(NOT ASSIGNED)
D-Yogh Digraph	ʤ	214	(NOT ASSIGNED)
T-Curly-tail-C Digraph	ʦ (NO)	215	
D-Curly-tail-Z Digraph	ʣ (NO)	216	
Crossed Two	ƻ (NO)	290	
Turned K	ʞ (NO)	291	
Superscript X	ˣ (NO)	292	
N, Right Leg	ɳ (NO)	293	
Crossed Lambda	ƛ	294	(NOT ASSIGNED)
Lambda	λ	295	(NOT ASSIGNED)
Z Wedge	ǯ	296	(NOT ASSIGNED)
S Wedge	ʃ	297	(NOT ASSIGNED)
J Wedge	ǰ	298	(NOT ASSIGNED)
C Wedge	ǰ	299	(NOT ASSIGNED)

Consonant/Vowel Symbols (continued)

Lower-case I	i	301	I
Lower-case E	e	302	E
Epsilon	ɛ	303	Sh E
Lower-case A	a	304	A
Cursive A	ɑ	305	Sh A
Open O	ɔ	306	Sh O
Lower-case O	o	307	O
Lower-case U	u	308	U
Lower-case Y	y	309	Y
Slashed O	ø	310	Sh \ (|)
O-E Digraph	œ	311	\
Small Capital O-E Digraph	œ	312	Sh 7 (&)
Turned Cursive A	ɒ	313	Sh Q
Turned V	ʌ	314	Sh V
Ram's Horns	ɤ	315	7
Turned M	ɯ	316	8
Barred I	ɨ	317	9
Barred U	ʉ	318	Sh] (})
Small Capital I	ɪ	319	Sh I
Small Capital Y	ʏ	320	Sh Y
Upsilon	ʊ	321	Sh U
Schwa	ə	322	Sh 2 (@)
Barred O	ɵ	323	Sh P
Turned A	ɐ	324	6
Ash Digraph	æ	325	Sh [({)
Reversed Epsilon	ɜ	326	3
Right-hook Schwa	ɚ	327	2

Undotted I	ɪ (NO)	394	
Closed Reversed Epsilon	ɞ	395	(NOT ASSIGNED)
Closed Epsilon	ɘ	396	(NOT ASSIGNED)
Reversed E	ɔ	397	(NOT ASSIGNED)
Closed Omega	ɷ	398	(NOT ASSIGNED)
Iota	ɩ	399	(NOT ASSIGNED)

Segmental Diacritics

Apostrophe	'	401	Alt 8	p' k' ts' tʃ'
Under-ring (Over-ring)	◌̥ (˚)	402	Alt O	ṉ ḍ (ḥ ḡ)
Subscript Wedge	◌̬	403	Alt V	ʂ ḳ
Superscript H	ʰ	404	Alt H	pʰ tʰ
Subscript Umlaut	◌̤	405	Alt I	b̤ a̤
Subscript Tilde	◌̰	406	Alt C	b̰ a̰
Subscript Seagull	◌̼	407	Alt M	
Subscript Bridge	◌̪	408	Alt 3	n̪ d̪
Inverted Subscript Bridge	◌̺	409	(NOT ASSIGNED)	
Subscript Square	◌̻	410	(NOT ASSIGNED)	
Subscript Right Half-ring	◌̹	411	Alt 0	ɔ̹
Subscript Left Half-ring	◌̜	412	Alt 9	ɔ̜
Subscript Plus	◌̟	413	Alt =	ɯ̟
Under-bar	◌̲	414	Alt -	i̲
Umlaut	◌̈	415	Alt U	ë
Over-cross	◌̽	416	(NOT ASSIGNED)	e̽
Advancing Sign	◌̈	417	(NOT ASSIGNED)	
Retracting Sign	◌̈	418	(NOT ASSIGNED)	
Right Hook	◌̩	419	Alt R	e˞ o˞ (former ɐ ɔ)
Superscript W	ʷ	420	Alt W	tʷ dʷ
Superscript J	ʲ	421	Alt J	tʲ dʲ
Superscript Gamma	ˠ	422	Alt K	tˠ dˠ
Superscript Reversed Glottal Stop	ˤ	423	Alt P	tˤ dˤ
Superscript Tilde	◌̃	424	Sh ` (~)	ẽ ɑ̃
Superscript N	ⁿ	425	Alt N	dⁿ
Superscript L	ˡ	426	Alt L	dˡ
Corner	◌̚	427	Alt T	p̚ d̚
Superimposed Tilde	◌̴	428	Alt F	n̴ d̴
Raising Sign	◌̝	429	Alt Q	e̝ ɹ̝ (e˔ o˔)
Lowering Sign	◌̞	430	Alt A	e̞ β̞ (e˕ o˕)
Syllabicity Mark	◌̩	431	Alt S	ɹ̩ n̩ l̩
Subscript Arch	◌̯	432	(NOT ASSIGNED)	e̯
Top Tie Bar	◌͡ (NO)	433		k͡p g͡b t͡s d͡ʒ
Comma	◌̕ (NO)	491		
Reversed Apostrophe	◌̒ (NO)	492		
Over-dot	◌̇	493	(NOT ASSIGNED)	ȧ ż
Minus Sign	- (NO)	494		i-
Plus Sign	+ (NO)	495		u+
Superscript Y	ʸ (NO)	496		pʸ
Under-dot	◌̣	497	(NOT ASSIGNED)	e̤ w̤
Palatalization Hook	◌̡ (NO)	498		t̡
Subscript W	◌̫ (NO)	499		ɬ̫ ɖ̫

Suprasegmental Symbols

Vertical Stroke (Superior)	ˈ	501	Sh 8 (*)	ˌfoʊnəˈtɪʃən
Vertical Stroke (Inferior)	ˌ	502	Alt 2	ˌfoʊnəˈtɪʃən
Length Mark	ː	503	Alt Z	eː
Half-length Mark	ˑ	504	Alt X	eˑ
Breve	˘	505	Alt E	ĕ
Period	.	506	(NOT ASSIGNED)	ɹiːækt
Vertical Line	|	507	Alt \	
Double Vertical Line	‖	508	(NOT ASSIGNED)	
Bottom Tie Bar	‿	509	(NOT ASSIGNED)	ˌfɑːɹ‿əˈweɪ
Upward Diagonal Arrow	↗	510	(NOT ASSIGNED)	
Downward Diagonal Arrow	↘	511	(NOT ASSIGNED)	
Double Acute Accent (over)	˝	512	(NOT ASSIGNED)	á́
Acute Accent (over)	ˊ	513	Alt 5	á
Macron	¯	514	Alt 4	ā
Grave Accent (over)	ˋ	515	Alt 7	à
Double Grave Accent (over)	˵	516	(NOT ASSIGNED)	à̏
Down Arrow	↓	517	(NOT ASSIGNED)	
Up Arrow	↑	518	(NOT ASSIGNED)	
Extra-high Tone Bar	˥	519	(NOT ASSIGNED)	
High Tone Bar	˦	520	(NOT ASSIGNED)	
Mid Tone Bar	˧	521	(NOT ASSIGNED)	
Low Tone Bar	˨	522	(NOT ASSIGNED)	
Extra-low Tone Bar	˩	523	(NOT ASSIGNED)	
Fall-rise Contour Tone	ˇ	524	(NOT ASSIGNED)	ă
Rise-fall Contour Tone	ˆ	525	(NOT ASSIGNED)	â
Level-rise Contour Tone	ˏ	526	(NOT ASSIGNED)	
Fall-level Contour Tone	ˎ	527	(NOT ASSIGNED)	
Fall-rise-fall Contour Tone	ˋˆ	528	(NOT ASSIGNED)	
Rise Tone Bar	˩˥	529	(NOT ASSIGNED)	
Fall Tone Bar	˥˩	530	(NOT ASSIGNED)	
High-rise Tone Bar	˦˥	531	(NOT ASSIGNED)	
Low-rise Tone Bar	˨˩	532	(NOT ASSIGNED)	
Rise-fall Tone Bar	˩˥˩	533	(NOT ASSIGNED)	

Suprasegmental Symbols (continued)

Superscript Arch	◌͡◌	595 (NO)	(NOT ASSIGNED)	a͡
Wedge	◌̌	596 (NO)	(see 524)	ǎ
Circumflex	◌̂	597 (NO)	(see 525)	â
Grave Accent (under)	◌̗	598	(NOT ASSIGNED)	a̗
Acute Accent (under)	◌̖	599	(NOT ASSIGNED)	a̖

Symbols for Voice Quality or Pathological Speech	(NO)	6nn		
Reserved for Future Specification	(NO)	7nn - 8nn		
Escape Sequences (Control Characters)		9nn		
Left Square Bracket	[	901	[	
Right Square Bracket	]	902	]	
Slash	/	903	/	
Backspace	(NO)	904		
Backspace Overstrike	(NO)	905		

Consonant/Vowel Symbols (Alphabetical Order by Name)

Ash Digraph	æ	325
Barred Dotless J	ɟ	108
Barred Glottal Stop	ʡ	172
Barred I	ɨ	317
Barred O	ɵ	323
Barred Reversed Glottal Stop	ʢ	174
Barred U	ʉ	318
Belted L	ɬ	148
Beta	β	127
Bull's Eye	ʘ	176
C Cedilla	ç	138
C Wedge	ɕ	299
Chi	χ	142
Closed Epsilon	ɘ	396
Closed Omega	ɷ	398
Closed Reversed Epsilon	ɞ	395
Crossed H	ħ	144
Crossed Lambda	ƛ	294
Crossed Two	ƻ	290
Curly-tail C	ɕ	182
Curly-tail Esh	ʆ	204
Curly-tail J	ʝ	139
Curly-tail Yogh	ʒ	205
Curly-tail Z	ʐ	183
Cursive A	ɑ	305
Cursive G	ɡ	210
Cursive V	ʋ	150
D-Curly-tail-Z Digraph	ʤ	216
D-Yogh Digraph	ʤ	214
D-Z Digraph	ʣ	212
Double Pipe	‖	180
Double-barred Pipe	ǂ	179
Eng	ŋ	119
Epsilon	ɛ	303
Esh	ʃ	134
Eth	ð	131
Exclamation Point	!	178
Fish-hook R	ɾ	124
Gamma	ɣ	141
Glottal Stop	ʔ	113
Hooktop B	ɓ	160
Hooktop Barred Dotless J	ʄ	164
Hooktop C	ƈ	163
Hooktop D	ɗ	162
Hooktop G	ɠ	166
Hooktop H	ɦ	147
Hooktop Heng	ɧ	175
Hooktop K	ƙ	165

Consonant/Vowel Symbols (Alphabetical Order by Name) (continued)

Hooktop P	ƥ	159
Hooktop Q	ʠ	167
Hooktop Small Capital G	ɢ	168
Hooktop T	ƫ	161
Inverted Glottal Stop	ʖ	203
Inverted Small Capital R	ʁ	143
Iota	ɩ	399
J Wedge	ǰ	298
L with Tilde	ɬ	209
L-Yogh Digraph	ɮ	149
Lambda	ƛ	295
Left-hook T	ƭ	208
Left-tail M (at right)	ɱ	115
Left-tail N (at left)	ɲ	118
Long-leg R	ɾ	206
Lower-case A	a	304
Lower-case B	b	102
Lower-case C	c	107
Lower-case D	d	104
Lower-case E	e	302
Lower-case F	f	128
Lower-case G	g	110
Lower-case H	h	146
Lower-case I	i	301
Lower-case J	j	153
Lower-case K	k	109
Lower-case L	l	155
Lower-case M	m	114
Lower-case N	n	116
Lower-case O	o	307
Lower-case P	p	101
Lower-case Q	q	111
Lower-case R	r	122
Lower-case S	s	132
Lower-case T	t	103
Lower-case U	u	308
Lower-case V	v	129
Lower-case W	w	170
Lower-case X	x	140
Lower-case Y	y	309
Lower-case Z	z	133
N, Right Leg	ŋ	293
O-E Digraph	œ	311
Open O	ɔ	306
Phi	ɸ	126
Pipe	ǀ	177

Consonant/Vowel Symbols (Alphabetical Order by Name) (continued)

Ram's Horns	ɤ	315
Reversed E	ɘ	397
Reversed Epsilon	ɜ	326
Reversed Glottal Stop	ʕ	145
Right-hook Schwa	ɚ	327
Right-tail D	ɖ	106
Right-tail L	ɭ	156
Right-tail N	ɳ	117
Right-tail R	ɽ	125
Right-tail S (at left)	ʂ	136
Right-tail T	ʈ	105
Right-tail Z	ʐ	137
S Wedge	ʃ	297
Schwa	ə	322
Slashed O	ø	310
Small Capital B	ʙ	121
Small Capital G	ɢ	112
Small Capital H	ʜ	173
Small Capital I	ɪ	319
Small Capital L	ʟ	158
Small Capital N	ɴ	120
Small Capital O-E Digraph	œ	312
Small Capital R	ʀ	123
Small Capital Y	ʏ	320
Stretched C	ʗ	202
Superscript S	ˢ	207
Superscript X	ˣ	292
T-Curly-tail-C Digraph	ʦ	215
T-Esh Digraph	ʧ	213
T-S Digraph	ʦ	211
Theta	θ	130
Turned A	ɐ	324
Turned Cursive A	ɒ	313
Turned H	ɥ	171
Turned K	ʞ	291
Turned Long-leg R	ɺ	181
Turned M	ɯ	316
Turned M, Right Leg	ɰ	154
Turned R	ɹ	151
Turned R, Right Tail	ɻ	152
Turned T	ʇ	201
Turned V	ʌ	314
Turned W	ʍ	169
Turned Y	ʎ	157
Undotted I	ɪ	394
Upsilon	ʊ	321
Yogh	ȝ	135
Z Wedge	ʒ	296

THE INTERNATIONAL PHONETIC ALPHABET (revised to 1993) NUMBER CHART

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	101 102			103 104		105 106	107 108	109 110	111 112		113
Nasal	114	115		116		117	118	119	120		
Trill	121			122					123		
Tap or Flap				124		125					
Fricative	126 127	128 129	130 131	132 133	134 135	136 137	138 139	140 141	142 143	144 145	146 147
Lateral fricative				148 149							
Approximant		150		151		152	153	154			
Lateral approximant				155		156	157	158			

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

CONSONANTS (NON-PULMONIC)

Clicks		Voiced implosives		Ejectives		
				401		
176	Bilabial	160	Bilabial	as in:		
177	Dental	162	Dental/alv.	101	+ 401	Bilabial
178	(Post)alveolar	164	Palatal	103	+ 401	Dental/alv.
179	Palatoalveolar	166	Velar	109	+ 401	Velar
180	Alveolar lateral	168	Uvular	132	+ 401	Alveolar fricative

SUPRASEGMENTALS

		TONES & WORD ACCENTS					
		LEVEL			CONTOUR		
501	Primary stress						
502	Secondary stress	512	519	Extra high	524	529	Rising
503	Long	513	520	High	525	530	Falling
504	Half-long	514	521	Mid	526	531	High rising
505	Extra-short	515	522	Low	527	532	Low rising
506	Syllable break	516	523	Extra low	528	533	Rising-falling
507	Minor (foot) group						etc.
508	Major (inton.) group		517	Downstep		510	Global rise
509	Linking (absence of a break)		518	Upstep		511	Global fall

THE INTERNATIONAL PHONETIC ALPHABET (revised to 1993)

CONSONANTS (PULMONIC)

	Bilabial	Labiodental	Dental	Alveolar	Postalveolar	Retroflex	Palatal	Velar	Uvular	Pharyngeal	Glottal
Plosive	p b			t d		ʈ ɖ	c ɟ	k g	q G		ʔ
Nasal	m	ɱ		n		ɳ	ɲ	ŋ	N		
Trill	B			r					R		
Tap or Flap				ɾ		ɽ					
Fricative	ɸ β	f v	θ ð	s z	ʃ ʒ	ʂ ʐ	ç ʝ	x ɣ	χ ʁ	ħ ʕ	h ɦ
Lateral fricative				ɬ ɮ							
Approximant		ʋ		ɹ		ɻ	j	ɰ			
Lateral approximant				l		ɭ	ʎ	ʟ			

Where symbols appear in pairs, the one to the right represents a voiced consonant. Shaded areas denote articulations judged impossible.

CONSONANTS (NON-PULMONIC)

Clicks		Voiced implosives		Ejectives	
ʘ	Bilabial	ɓ	Bilabial	ʼ	as in:
ǀ	Dental	ɗ	Dental/alveolar	pʼ	Bilabial
ǃ	(Post)alveolar	ʄ	Palatal	tʼ	Dental/alveolar
ǂ	Palatoalveolar	ɠ	Velar	kʼ	Velar
ǁ	Alveolar lateral	ʛ	Uvular	sʼ	Alveolar fricative

SUPRASEGMENTALS

ˈ	Primary stress	ˌfoʊnəˈtɪʃən	
ˌ	Secondary stress		
ː	Long	eː	
ˑ	Half-long	eˑ	
◡	Extra-short	ĕ	
.	Syllable break	ɹi.ækt	
|	Minor (foot) group		
‖	Major (intonation) group		
‿	Linking (absence of a break)		

TONES & WORD ACCENTS

LEVEL		CONTOUR	
˥ or ˩	Extra high / Extra low	˦˥ or ˥˩	Rising / Falling
˦	High	˩˥	High rising
˧	Mid	˩˦	Low rising
˨	Low	˦˥˦	Rising-falling
↓	Downstep	↗	Global rise
↑	Upstep	↘	Global fall

etc.

VOWELS

	Front		Central		Back	
Close	i	y	ɨ	ʉ	ɯ	u
	ɪ	ʏ			ʊ	
Close-mid	e	ø	ɘ	ɵ	ɤ	o
			ə			
Open-mid	ɛ	œ	ɜ	ɞ	ʌ	ɔ
	æ		ɐ			
Open	a	ɶ			ɑ	ɒ

Where symbols appear in pairs, the one to the right represents a rounded vowel.

OTHER SYMBOLS

- ʍ Voiceless labial-velar fricative
- w Voiced labial-velar approximant
- ɥ Voiced labial-palatal approximant
- ʜ Voiceless epiglottal fricative
- ʢ Voiced epiglottal fricative
- ʡ Epiglottal plosive
- ɕ ʑ Alveolo-palatal fricatives
- ɺ Alveolar lateral flap
- ʩ Simultaneous ʃ and x

Affricates and double articulations can be represented by two symbols joined by a tie bar if necessary.

k͡p t͡s

DIACRITICS

Diacritics may be placed above a symbol with a descender, e.g. n̊

◌̥	Voiceless	n̥ d̥	◌̤ Breathy voiced	b̤ a̤	◌̪ Dental	t̪ d̪
◌̬	Voiced	s̬ t̬	◌̰ Creaky voiced	b̰ a̰	◌̺ Apical	t̺ d̺
◌ʰ	Aspirated	tʰ dʰ	◌̼ Linguolabial	t̼ d̼	◌̻ Laminal	t̻ d̻
◌̹	More rounded	ɔ̹	◌ʷ Labialized	tʷ dʷ	◌̃ Nasalized	ẽ
◌̜	Less rounded	ɔ̜	◌ʲ Palatalized	tʲ dʲ	◌ⁿ Nasal release	dⁿ
◌̟	Advanced	u̟	◌ˠ Velarized	tˠ dˠ	◌ˡ Lateral release	dˡ
◌̠	Retracted	i̠	◌ˤ Pharyngealized	tˤ dˤ	◌̚ No audible release	d̚
◌̈	Centralized	ë	◌̴ Velarized or pharyngealized	ɫ		
◌̽	Mid-centralized	e̽	◌̝ Raised	e̝ (ɪ̝ = voiced alveolar fricative)		
◌̩	Syllabic	ɪ̩	◌̞ Lowered	e̞ (β̞ = voiced bilabial approximant)		
◌̯	Non-syllabic	e̯	◌̘ Advanced Tongue Root	e̘		
◌˞	Rhoticity	ə˞	◌̙ Retracted Tongue Root	e̙		